U.S. Army Environmental Management Good News Stories

Volume III

Earth Year Commemorative Issue
April 1995

Edited by
Pamela Howell

Abstract

Over the past several years, the U.S. Army has been engaged in ar institutionalized program of environmental stewardship. This com mitment began at the highest levels of Army leadership and has beer so high a priority that it has been made an official part of the mis sion at Army Headquarters, each major command, agency, and in stallation. The Army has incorporated environmental goals int orientation processes at most installations so that each soldier, civil ian employee, and family member will understand and embrace th concept of environmental stewardship. Most installations now hav environmental teams and natural-resource management plans; som have staff environmental professionals or partnerships with othe federal, state, and local agencies and academic institutions to ad dress mutual environmental problems. These efforts have helped t implement hundreds of new programs, procedures, and product which enhance, protect, and restore the environments that the Army stewards. The first two volumes of the Army Environmental Policy Institute publication *U.S. Army Environmental Management Good News Stories* documented these accomplishments. This document Volume III, provides further examples of the Army's extensiv progress.

Acknowledgments

The Army Environmental Policy Institute published this document under the guidance of AEPI Director, Dr. Edward Novak, and Mr. Robert Jarrett of AEPI. The primary author and researcher is Ms. Pamela Howell. Ms. Nancy Davis and Ms. Rae Adams of Communications & Training Technology Branch, Georgia Tech Research Institute, Georgia Institute of Technology, performed final editing, design, and layout.

Army Headquarters, many major commands, installations, and agencies provided significant support by responding to queries for good news stories. Without their input, this document would not have been possible. Special thanks go to Mr. Rudy Stine, HQ FORSCOM, for initiating the concept of a good news document, and to Army Environmental Center's *Environmental Update*, where some of these stories were first publicized.

Table of Contents

Scope

AEPI compiled these good news stories by contacting Department of Army Headquarters and U.S. Army major commands, and agencies who contacted individual installations and units. Commands, installations and agencies submitted more than 180 stories; AEPI prioritized the stories for timeliness and relevance and edited them to fit the format of this publication. Success stories actually used in this book were limited to projects and programs that occurred in the last three years and that had not been reported in previous editions of *U.S. Army Environmental Management Good News Stories*. Many submissions that addressed routine procedures or Army-wide mandated procedures were combined and summarized throughout this publication. This volume differs from previous editions of *U.S. Army Environmental Management Good News Stories* in that it is arranged by the Army's strategic environmental areas. It also features synopsis boxes for each story and lists the major command after each installation/activity, where appropriate. This publication is by no means an exhaustive look at all of the initiatives in the field—it is but a sampling of the Army's continuing environmental accomplishments.

Introduction

The year 1995 has been designated as Earth Year, because it is the 25th anniversary of the Earth Day celebration. On the first Earth Day in 1970, the U.S. Army was still involved in the Viet Nam war. On battlefields in foreign lands and in training areas at home, the Army's combat and training mission overshadowed concern for the environment. Since 1970, the Army has undertaken a comprehensive environmental program, which encompasses a wide range of proactive and corrective measures. Today, the Army Environmental Policy Institute celebrates Earth Day and Earth Year with pride and confidence that the Army is now taking its place as a leading steward of the national and international environments where it conducts its many operations. AEPI is releasing this publication, *U.S. Army Environmental Management Good News Stories Volume III*, in recognition of Earth Day 1995—April 22, in recognition of Earth Year, and to highlight and celebrate the many accomplishments taking place at U.S. Army organizations worldwide.

Compliance

416th Engineer Command, Washington, D.C.—U.S. Army Reserve Command: *Reducing Costs of Environmental Assessments*

The 416th Engineer Command completed an environmental assessment program in Kuwait in minimal time, saving substantial dollars.

The 416th Engineer Command recently completed an Environmental Compliance Assessment for the 3rd U.S. Army in Kuwait. The effort is part of a routine Army-wide assessment program requiring Army compliance with all applicable environmental laws of the United States and those of any foreign country hosting the U.S. Army. The active Army has been performing the assessments by contracts, at a cost ranging from $150,000 to $300,000, depending on the size of the installation.

However, the 416th Engineer Command accomplished their assessment for Army installations in Kuwait at a cost of less than $20,000. Lieutenant Colonel Hugh Colasacco, the team leader, attributed the savings to the reduced time expended to complete the assessment. He cited team members' willingness to work unusually long hours and the fact that the team was selected with strict criteria.

The 416th Engineer Command has set high standards as a provider of facilities-engineering support for the Army Reserves and has a proven record of performing Environmental Compliance Assessments. The team has accomplished more than 1,000 assessments for Army Reserve Centers across the country in the past four years.

POC: Lieutenant Colonel Hugh Colasacco, (202) 501-0112

A program that trains on-post personnel to perform or supervise asbestos removal reduces delays and paperwork.

Fort Gordon, Georgia—TRADOC: *Saving Resources on Asbestos Removal*

Fort Gordon, Georgia, has instituted a program to train on-post personnel to perform asbestos removal and/or supervise asbestos workers. Projects can now be accomplished in-house, rather than work orders for the asbestos removal being contracted out. This prevents costly delays and reduces paperwork during construction and/or renovation projects. Before this training program was implemented, the base operations contractor was required to halt a project whenever asbestos was encountered. The contractor had to initiate a work order and then contract with an asbestos-abatement company for removal before resuming the initial project.

Federal, state, and local regulations placed on the removal process make asbestos abatement a costly procedure. Fort Gordon officials applied to the state of North Carolina to gain approval through the U.S. Environmental Protection Agency to teach an Asbestos Abatement Contractor/Supervisor Course. Those completing the course are EPA-certified to perform asbestos removal and/or supervise other asbestos workers. The courses are taught at Fort Gordon, and the certification is good only for asbestos removal projects on Fort Gordon.

POC: David A. Martin, (706) 791-2403, DSN 780-2403

Presidio of Monterey/Fort Ord, California: *Computerized Document Register*

A computerized database simplifies the tracking of hazardous waste.

The Hazardous Waste Division, Directorate of Environmental and Natural Resources, Presidio of Monterey (formerly Fort Ord) has developed a computerized document register for all hazardous-waste turn-ins. The 1.5-megabyte

database contains over 3,000 lines of information. Each line details one turn-in (DD form 1848). This database can be sorted quickly by 22 different parameters, including Julian date, unit/generator, and waste stream. Information is easily retrieved, simplifying the tracking of individual drums of waste.

Because of the closure of Fort Ord, engineer teams turned in an unusually large variety and quantity of hazardous waste as buildings were cleaned out. The computerized database was an invaluable tool in this situation and continues to assist with the management of the volumes of information in the Hazardous Waste Division.

POC: Sandi Maroni, (408) 242-2054

Conservation and Preservation

The U.S. Army Environmental Center: *Watershed and Environmental Enhancement Agreement*

This agreement is expected to help the Army protect military-training and maneuver areas by using ecological systems planning expertise available from the Soil Conservation Service.

The U.S. Army Environmental Center and the U.S. Soil Conservation Service (SCS) signed a Memorandum of Understanding for Watershed and Environmental Enhancement in December 1993. This agreement is expected to help the Army protect military-training and maneuver areas by using ecological systems planning expertise available from the Soil Conservation Service. The formal memorandum calls for the Soil Conservation Service to provide full-time experts in soil and water conservation, who will work in the Army Environmental Center's Environmental Compliance Division at the Edgewood Area of Aberdeen Proving Ground. Army installations throughout the country will be the prime beneficiaries of the partnership, as working arrangements between SCS field offices and Army installations nationwide are developed.

POC: Jerry Williamson, (410) 671-6828, DSN 584-6828

The post has created a cold-water trout fishery; resumed a fish and wildlife program; expanded a nonconsumptive wildlife program; begun an urban deer-management program; and initiated studies on protecting shorelines from erosion.

Army Research Laboratory, Adelphi Laboratory Center, Adelphi, Maryland—AMC: *Natural Resources Management and Enhancement*

The Natural Resources Management Plan for the Adelphi Laboratory Center and the laboratory's subinstallations—Blossom Point Field Test Facility and Woodbridge Research Facility—are administered by the management agronomist at Division of Public Works and the division's fifteen wildlife conservation officers. They often work with members from the community, Maryland Department of Natural Resources, and the Humane Society of the United States.

Under the plan, the following have been accomplished:

Wildlife

The post created a cold-water trout fishery, which will eventually restore a one-kilometer stretch of the stream to its original condition. The post has placed in-stream boulders to create riffles and pools and has established a reforestation program to provide the necessary shade for this warm-water–intolerant species. This project has been recognized as an integral part of the joint federal–state effort to restore and rehabilitate the Anacostia River.

With the strong encouragement of the installation commander, a fish and wildlife program has been resumed at the Blossom Point Field Test Facility after a 10-year suspension. The program had been allowed to lapse in 1983 because of lack of aggressive support from the natural-resource professional at the time. The new program is conducted in accordance with the revised Natural Resources Management Plan and in cooperation with the Maryland Department of Natural Resources. A whitetail-deer hunting program has been implemented, along with a nontidal fishing program in the Nanjemoy Creek. During the course of the year, more than 4,000 hours of recreation opportunity can be provided to members of the general public under this program.

A nonconsumptive wildlife program has been greatly expanded at the Woodbridge Research Facility. The entire 263 hectares on the facility are being allowed to develop naturally, with a total cessation of grounds maintenance. The neotropical migratory bird population has responded remarkably to this change. The abandoned antenna and test fields, in the midst of the urban sprawl, have become havens for these species. Monthly bird-watching expeditions by the general public have yielded sightings of over 190 individual species. Concurrently, populations of fox, beaver, groundhog, rabbits, and whitetail deer have thrived.

An urban deer-management program was begun at ALC. The first phase involves a series of meetings with individuals representing

the community (president of the local Citizens Association), state of Maryland (regional biologist, Department of Natural Resources), Animal Welfare/Rights Group (senior scientist, Humane Society of the United States), and the installation. Numerous options were examined, and a decision paper which initially focuses on soliciting the ALC workforce's cooperation in avoiding deer–vehicular incidents was developed and implemented.

Erosion Protection

A conceptual plan for stabilizing the shoreline for Blossom Point Field Test Facility was developed by the Baltimore District Corps of Engineers. The designs proposed for construction are intended to minimize the rate of bank erosion that is occurring at the facility. This influx of sedimentation causes a deterioration of habitat in the Potomac River, a major tributary of the Chesapeake Bay.

POC: Don Brower, (301) 394-4511, DSN 290-4511

Fort Wingate Depot Activity, Gallup, New Mexico—AMC: *Identifying and Preserving Historic Resources*

Cultural resource investigations have documented more than 520 historically significant cultural properties.

Fort Wingate Depot Activity, an installation slated for closure in the 1988 Base Closure and Realignment Act, contains an abundance of historically significant sites. Recognizing that, the installation's leadership has led an effort to preserve cultural resources. The effort has included a diverse group of other agencies and groups, among which are: Department of the Army, Department of the Interior, Advisory Council on Historic Preservation, New Mexico State Historic Preservation Office, Navajo Nation, and Zuni Tribe.

This multifaceted partnership has drafted a memo to direct cultural resource investigations. The U.S. Army Corps of Engineers, Albuquerque District, now conducts on-going investigations and, as of the fall of 1994, had completed an intensive survey of more than 15,000 acres. They discovered more than 520 prehistoric and historic cultural properties dating back to eras from almost 4,000 years

ago to as recently as the 1930s. Especially innovative was the teaming of Explosive Ordnance Demolition experts and archeological survey crews. Some sites discovered are being considered for addition to the National Register of Historic Places.

A second component of the work has consisted of interviews with members of three chapters of the Navajo Nation and Zuni Tribe. These interviews helped the Army determine origin dates of discoveries and document the significance of findings including sacred sites.

POC: Larry Fisher, (801) 833-3040

Pine Bluff Arsenal, Pine Bluff, Arkansas—AMC: *Transforming Sewage Lagoons into Waterfowl Refuge*

A new waterfowl refuge created from former sewage lagoons has dramatically increased the number of ducks, herons, and shore birds there.

Pine Bluff Arsenal (PBA) has turned a group of former sewage-oxidation lagoons into a waterfowl refuge. Personnel from the Three Rivers Audubon Society and the Jefferson County Wildlife Association, who noted that the lagoons were no longer being used for sewage treatment, suggested the project. The city of Pine Bluff had been leasing the lagoons from PBA but stopped using them after building a new wastewater treatment plant.

In an initial study, PBA personnel took water and soil samples and determined that the lagoons were not contaminated with heavy metals. PBA terminated its lease agreement with the city and resumed responsibility for the sewage lagoons. After consulting with the U.S. Fish and Wildlife Service and the Arkansas Game and Fish Commission, PBA incorporated the area into the PBA Natural Resources Management Plan, drained the lagoons, and performed transitional work.

PBA workers repaired erosion along the lagoon levees and constructed a new levee to divide the lagoon into three distinct impoundments. The surface area of the impoundments is approximately 32 acres, 23 acres, and 4 acres, respectively. PBA installed water-control valves and discharge pipes for each impoundment; PBA also installed valves

between impoundments, so that wet soil could be managed by discharging water from one point to another.

The number of ducks, herons, and shore birds increased dramatically, even under less-than-optimum conditions. Annual bird counts conducted by PBA Natural Resources and the Three Rivers Audubon Society have confirmed increased numbers of waterfowl present in the area.

The waterfowl refuge area is off limits for all hunting. When it was determined that additional water was needed to provide optimum habitat, a plan was devised to pump water from the nearby Caney Bayou. A Legacy Program project to construct two wooden observation towers was completed in September 1994. The towers elevate observers above the impoundment levees and provide concealment to people wishing to observe waterfowl without disturbing normal wildlife activities. School groups and the general public have come to watch waterfowl.

This type of project can be undertaken wherever sewage lagoons are no longer required for their original purpose.

POC: Charles M. Becker, (501) 540-2834

Radford Army Ammunition Plant, Radford, Virginia—AMC: *Protecting Wildlife*

The plant has completed construction of a fifth wetland area, has hosted children's fishing rodeo events, entered into cooperative wildlife-management efforts, and reduced herbicide use.

The Radford Army Ammunition Plant (RAAP) in Radford, Virginia, is a government-owned, contractor-operated U.S. Army Armament, Munitions and Chemical Command (AMCCOM) installation that manufactures propellent and explosives. The plant has been operated by Hercules, Incorporated, since 1941.

In 1993, the installation completed the construction of a fifth wetland area at the New River Plant. The area has become the new home for numerous blue and green herons, several species of duck, and even Canada geese.

The wetland areas have allowed the installation to host four Children's Fishing Rodeo events from 1992 through 1994. The most recent Children's Fishing Rodeo was hosted so that local disabled children could go fishing for the first time in their lives. The fishing rodeos would not have been possible without the participation of the Natural Resources Conservation Association, which bought the trout that the children were to catch, provided the tackle, and served as escorts.

Radford Army Ammunition Plant entered into a new cooperative effort with the Virginia Department of Game and Inland Fisheries under which the state manages the wildlife-management program at the New River unit. This program has converted approximately 50 acres of existing vegetation into more nutritious wildlife forage; created brush piles to shelter wildlife; repaired deer stands; conducted bird and butterfly surveys; and created a home for six young Canada geese.

The installation drastically reduced mowing of natural grass and vegetation and the use of herbicides. In addition, the installation has planted 200 fruit trees. In the future, a 5- to 10-foot-wide strip around these trees will be left unmowed so that cover for wildlife is created. These changes have helped to reduce the installation's grounds-maintenance cost and helped to create new wildlife habitat.

POC: Terry Thompson, (703) 639-8649, DSN 931-8649

Tobyhanna Army Depot, Tobyhanna, Pennsylvania—AMC: *Wildlife Conservation*

The depot has implemented a comprehensive plan that includes wildlife conservation. Stream quality has been improved; surveys of species have been conducted; migratory birds have been protected; and endangered species have been protected or reintroduced.

A 1993 aquatic survey of Tobyhanna's Hummler Run (an on-post stream) showed a five-fold increase in benthic macroinvertebrates and a 35-fold increase of benthic organisms since a similar 1975 survey. In addition to showing significant improvement in water quality, the survey identified the presence of banded sunfish. The

banded sunfish is listed as Critically Imperiled in Pennsylvania because of its extreme rarity. This information was provided to the Nature Conservancy for use in the Threatened and Endangered Species listing.

Using Legacy Program funding, the depot contracted with the Nature Conservancy to conduct a survey of federal- and state-listed threatened and endangered species. This survey was completed in early 1994. Four state-listed species were identified—one osprey and three plants. All four reside in depot wetlands. A program was developed and implemented for protecting and preserving these species and their critical habitat.

The depot has become an active participant in the state's efforts to reintroduce a state-listed endangered species, the osprey. The depot is home to one nesting pair of ospreys that reside in a naturally constructed nest in Oakes Swamp. In 1994 a second osprey nesting platform was constructed so that other ospreys might be attracted to the area. The platform was built in coordination with East Stroudsburg University graduate and undergraduate students and the Pennsylvania Osprey Reintroduction Program manager.

Tobyhanna continues to work to protect migratory birds and improve their nesting habitat. Depot personnel constructed and maintain two osprey nesting platforms and fourteen wood-duck boxes. Depot wetlands create habitat for many other migratory birds such as Canada geese, mallards, tree swallows, and redwing blackbirds. Depot warehouses create ideal habitat for cliff and barn swallows and killdeer.

POC: James D. Scott, (717) 895-7603

TCAAP has engaged in a variety of activities aimed at protecting, recovering, and rearing various species of wildlife, including bluebirds, trumpeter swans, and the Blandings turtle.

Twin Cities Army Ammunition Plant, New Brighton, Minnesota—AMC: *Protecting and Rearing Wildlife*

Over the past two years, Twin Cities Army Ammunition Plant (TCAAP) has engaged in a variety of activities aimed at protecting, recovering, and rearing various species of wildlife. The installation has coordinated with the University of Minnesota and the Minnesota Department of Natural Resources (DNR) to have wildlife research studies conducted utilizing TCAAP as a study area. To date, 23 scientific studies have been completed, including three Ph.D. and three master's theses. Wildlife research projects have provided a wealth of information to the Natural Resources Program.

An important wildlife project, the Bluebird Recovery Program, was supervised by TCAAP personnel and executed by a member of the Minneapolis Chapter of the Audubon Society. The society member has worked hundreds of hours establishing a bluebird trail consisting of over 400 nesting boxes. More than 906 bluebirds and 1654 other song birds have been fledged during the reporting period from 1992 through 1994. TCAAP also launched another bird project when, in conjunction with the DNR, it introduced a pair of endangered trumpeter swans to the Marsden Lake wetland in 1994. The pair produced five young swans who spent the past summer at TCAAP. If the swans do not return in the spring of 1995, the Minnesota DNR will supply another breeding pair.

The Blandings turtle, also a resident of TCAAP, is a Minnesota Threatened Species, and TCAAP officials have enacted measures to protect it. Biologists from the DNR and University of Minnesota monitor and research the turtles on a continuing basis. Protective measures for Blandings turtle habitat include evaluating and repairing all fencing at the north and east perimeters so that turtles are pre-

vented from crossing roadways; erecting signage; and educating personnel to the turtle's presence.

POC: Marty McCleery (612) 633-2301 ext. 651, DSN 798-1500 ext. 651

Fort Carson, Colorado—FORSCOM: *Tracking Elk Herds*

Fort Carson has assisted in locating, capturing, and tagging elk to track movements, habits, and growth of herds, improving installation management.

Wildlife biologists at Fort Carson's Directorate of Environmental Compliance and Management (DECAM) have worked with the U.S. Fish and Wildlife Service and the Colorado Division of Wildlife to locate, capture, and tag selected elk. They rounded up herds downrange with the aid of helicopters.

The animals were flushed from wooded areas into meadows. They were captured with a net rather than tranquilizer guns and then blindfolded. Only the females were collared.

"The reason we don't tag adult male elk is because when the bull goes into 'rut' his neck has a tendency to swell beyond its normal size," said Michael Dunning, wildlife biologist with DECAM. "There are no expandable collars that we know of; and with the bull's neck swollen, a collar would probably choke the animal."

Sixteen cow elk received color-coded collars that will allow wildlife biologists to track movement between northern and southern areas. Yellow identifies a cow belonging to the northern herd, and orange identifies those from the much larger southern herd, which numbers 120. Young bulls were given an ear tag to monitor their movement. Six cow elk were fitted with special radio collars that will broadcast a signal back to DECAM and allow wildlife officials to locate and observe them for as long as three years without disturbing them.

"Basically the collars will gather more information on their habits, how they spend winters, and so on," said Dunning. "For example, we assume most animals are full-time residents of Fort Carson. The collars give us information on where they move around Fort Carson. Additionally, we can determine the annual growth of the herds."

Dunning added that the total herd has grown from ten elk in 1985 to more than 200 in 1995.

POC: Tom Warren, (719) 526-4828

Fort Irwin, California—FORSCOM: *Researching and Breeding the Endangered Desert Tortoise*

Fort Irwin is working with researchers at California State University Dominguesz Hills to breed, study, and ultimately safeguard the endangered desert tortoise.

For many decades, the desert tortoise has coexisted with vigorous Army training on the desert lands of Fort Irwin, California. Over the past several years, Fort Irwin officials have implemented a program to breed, study, and ultimately safeguard the endangered desert tortoise. The installation conducts this program at the Fort Irwin Study Site (FISS). Researchers at California State University Dominguesz Hills and Fort Irwin developed the program in response to a request from Southern California Edison (electrical company). The main foci of the program are gaining information about hatchling/neonatal tortoises and helping recover the species.

Results thus far include: a hatchling survival rate of greater than 95 percent; developing blood-property parameters for "normal" tortoises; determining the average incubation time for a natural desert setting; delineating food preference in hatchling tortoises; quantifying nest construction in neonatal tortoises; determining water budget suitable for survival, growth, and development of juvenile tortoises; and developing an optimal diet to provide necessary growth and development.

Future research is expected to center on translocating juvenile tortoises. The research will provide important information needed for reestablishing the species back into its natural habitat. Current mortality rates among juvenile tortoises during the first seven years of life are greater than 90 percent. A 10 percent improvement could facilitate recovery. Captive breeding in seminatural environments such as FISS might serve as a key component in increasing the sur-

vival rate. The researchers are also studying upper respiratory diseases of the tortoise, which have been a major factor in the decline of the species. The researchers are examining methods to transmit antibodies to the disease from mother to egg.

POC: Steve Ahmann, (619) 380-3410, DSN 470-3410

Fort Lewis, Washington—FORSCOM: *Protecting Wildlife Habitats*

Fort Lewis has worked to protect the natural habitats of wildlife, to save prairieland, and to preserve wetlands, and has developed a sustainable forestry program.

In cooperation with the U.S. Fish and Wildlife Service, the Army at Fort Lewis is striving to preserve the natural wildlife habitat on the fort's ranges. The post's environmental team has worked to protect the habitat for the estimated 200 to 300 sage grouse on the range; restricted range use on a seasonal basis; and closed down one training range entirely. The team has also saved some 13,000 acres of Tacoma prairie on the installation and has worked to preserve approximately 3,000 acres of pristine wetlands. Programs are in full swing to protect the habitat of bluebirds, wood ducks, Roy pocket gophers, owls, spotted frogs, western gray squirrels, western pond turtles, and purple martins. The Fort Lewis team has developed a sustainable forestry program on the installation's 58,000 acres of woodlands—a program that has virtually eliminated clear-cutting. The fort's large piece of northwestern real estate includes dozens of lakes, the Nisqually River system, and numerous feeder streams rated in excellent condition as habitat for salmon and trout.

POC: Randall Hanna, (206) 967-5646, DSN 357-5646

Fort Riley, Kansas—FORSCOM: *Creating a Haven for Rocky Mountain Elk*

Fort Riley has collaborated to establish an elk herd that now numbers more than 80, and long-range plans are to increase the elk population throughout Kansas, not just on the post.

Less than a decade ago, 12 Rocky Mountain elk were brought to the hills of Fort Riley, Kansas. Today, the herd numbers more than 80, thanks to Fort Riley's successful calving transplant project.

The project was a collaboration among the post, the Kansas Department of Wildlife and Parks (KDWP), the Rocky Mountain Elk Foundation, and two local outdoor sports clubs. The KDWP wanted to reestablish a free-ranging elk herd in the Flint Hills tallgrass prairie area of Kansas where Fort Riley is located. The first group of animals transplanted—three bulls, six cows, and three calves—came from a fenced preserve in McPherson County, some 80 miles away. Later groups were transplanted from South Dakota. The post has transplanted dozens of elk, and the herd has generated about 40 offspring. "Despite intense military training, the elk are still relatively undisturbed," said Herb Able, a fish and wildlife biologist at Fort Riley.

Fort Riley was ideal for the elk because its grasses are a primary food source for the Rocky Mountain elk. The post contains some of the only remaining native tallgrass prairie in the nation. Common grass varieties include big and little bluestem, Indian grass, and switchgrass. The elk munch on the abundant grasses and forbes found along the Kansas River where it runs through Fort Riley. They wander over an area that comprises nearly three-fourths of the post and graze in the strategically planted food-plot areas. Fort Riley land managers burn 25 to 30 percent of the land each spring to rejuvenate the vegetation.

The KDWP and Fort Riley plan to allow the elk population to increase within the limits of habitat and human tolerance, while also allowing limited hunting. The post's elk population could reach 125 and still be within manageable limits, said Able. He added that long-range plans are to increase the elk population throughout Kansas,

not just on the post. Currently, the only other free-ranging herd in Kansas is made up of about 75 elk that range on the Cimarron National Grasslands of southwest Kansas.

POC: Larry Woodruff and Dave Jones, (913) 239-3911

Fort Sam Houston, Texas—FORSCOM: *Restoring an Historic Landmark*

Fort Sam Houston is restoring Band Barracks, an historic structure dating from 1893. Work completed has greatly improved the physical appearance of the structure and has readied it for reroofing.

Fort Sam Houston has several historic structures, including the Band Barracks, which was initially constructed in 1893. Fort Sam Houston initiated a project to restore the two-and-one-half-story structure, which had deteriorated.

Work completed during Fiscal Year 1994 includes restoring the first and second floor verandas; restoring the cornice on all elevations; relaying/repointing the two brick chimneys above the roof line; and cleaning exposed exterior brick and stone work. This work has greatly improved the physical appearance of the structure and has readied it for reroofing.

Funding for this project was provided by the Department of Defense Legacy Resource Management Program. The project was completed as a cooperative effort between the Department of Defense and the National Park Service. All work was completed in accordance with the Secretary of the Interior's standards for treatment of historic structures.

POC: John Brenneman, (210) 221-4930, DSN 471-4930

Fort Belvoir's expanded wildlife refuges now include 2,100 acres and are home to endangered and threatened species. Under the new corridor plan, wildlife migration measures will be considered any time development affects the corridor.

Fort Belvoir, Virginia—MDW: *Expanding Wildlife Refuges and Practicing Ecosystem Management*

Fort Belvoir has added 600 acres to the post's already protected wildlife refuges, making total protected area approximately 2,100 acres—24 percent of the post.

The new designation was made official when post commander Brigadier General Clara Adams-Ender signed the Fort Belvoir and Wildlife Corridor Management Plan. The corridor connects the Jackson Miles Abbott Wetlands Refuge on North Post with the Accotink Bay Wildlife Refuge on South Post. It also provides the critical link in a larger 14-mile regional wildlife corridor that extends from Fairfax County Virginia's Huntley Meadows Park (north of the post) to the Mason Neck National Wildlife Refuge (south of the post).

Although the wildlife corridor already existed, there was no official document protecting it from encroaching development. With the new corridor plan, wildlife migration measures will be considered any time development affects the corridor. Wildlife in the corridor and refuges includes endangered and threatened species such as the American bald eagle, the wood turtle, and the Pygmy shrew.

POC: P. McClaughlin, (703) 806-4007

Army National Guard—NGB: *Leading in Natural Resource Plans*

The Army National Guard's ITAM program is a leader in DoD, allowing the Army National Guard to match training lands with environmental capacities.

The continuing implementation of the Integrated Training Area Management (ITAM) plans, a DoD-wide program, has allowed the Army National Guard to match training lands with environmental capacities. This program has provided for the inventory and moni-

toring of environmentally sensitive areas such as wetlands, endangered species, and potential erosion sites. Twenty-five Integrated Natural Resource Management plans are currently underway, which makes the Army National Guard's ITAM program a leader in DoD.

POC: Dr. Marc Imlay, (703) 607-7989

The Iowa National Guard has addressed the challenge of expansion by testing ground cover to determine which type best withstands military maneuvers and by customizing instruction on environmental training and awareness.

Iowa National Guard—NGB: *Meeting Expansion Challenges*

The Iowa Army National Guard's 4,300-acre Camp Dodge Military Reservation has doubled its size in the past five years because of land acquisitions, and the area continues to expand. Camp Dodge boasts the only Equipment Maintenance Center—CONUS (EMC–C) in the country. Although much of the area is pasture and converted farm land, the site also contains several prairie pothole wetlands and other natural areas. The increase in acreage at Camp Dodge has presented a challenge for quick and effective conversion from agricultural production to training area, while preserving and enhancing the natural environment. The Iowa Guard has addressed this challenge by converting land previously used in agricultural production to various types of cool-season grasses and warm-season grasses in a test to see which type best withstands military maneuvers.

Camp Dodge provides training for military personnel from throughout the United States attending the EMC–C and its Regional Training Site—Maintenance. A special challenge exists with the constant rotation of units, all possessing varying levels of environmental training and awareness. The Iowa National Guard has addressed this need through its own Environmental Compliance Training Program, which provides customized instruction to all personnel according to job duties. This instruction not only provides sound management procedures for hazardous materials and waste management at Camp Dodge but also prepares students for their environmental-management requirements at home station.

POC: Curt Madsen, (515) 252-4557

Nevada Army National Guard (NVARNG)—NGB: *Creating Riparian Habitat*

A habitat area that is home to an endangered species of burrowing owl and other threatened species is being protected.

The Lemmon Valley Riparian Habitat Area makes up a portion of the Stead NVARNG Training Site, and the lands surrounding the shallow lake are used for nonvehicular-type training. This habitat was fenced so that off-road vehicles that were eroding the site and threatening the burrowing owl, a state-listed sensitive species, were excluded. The Lemmon Valley Riparian Habitat Area is home to the largest concentration of burrowing owls in the state and also contains other threatened and sensitive species, such as the bald eagle, peregrine falcon, golden eagle, and red-tailed hawk, and native plants such as the Great Basin rye. More than 100 species of migratory and nonmigratory water birds have been recorded at this site, and a total of seven endangered species have been sighted over the past six years.

Working closely with the National Audubon Society, the Land Conservancy, and the local Department of Education, the NVARNG has implemented a Watchable Wildlife Program, and a plant, animal and bird inventory of the Riparian Habitat Area, which is now 50 percent complete. An archeological inventory, now 80 percent complete, is also underway to document an American Indian settlement that once stood at the site. Both studies are slated for completion by the end of Fiscal Year 1995.

POC: Loren Brazell, (702) 887-7379

ND ARNG is developing a resource database for land-use decision-making and is developing an integrated pest-management program that uses biological rather than chemical methods.

North Dakota Army National Guard—NGB: *Providing Valuable Data*

In cooperation with North Dakota State University, the North Dakota Army National Guard (ND ARNG) has established a Natural Resource Management Study at the Camp Grafton annual training site. Major components of the study include the development of a resource database for land-use decision-making, as well as the development of an integrated pest-management program. One notable aspect of the study is the research that is being conducted on the biological control of leafy spurge, a noxious weed that infests 2.5 million acres in southern Canada and the North Central United States and is especially difficult to control. The research is important because it is stressing biological rather than chemical methods to control the environmental degradation caused by this aggressive, exotic plant. This research is unique in the country and is providing data that will ultimately prove very valuable to the public and private sectors in the effort to control leafy spurge.

POC: CW5 Neal E. Jacobson, (701) 224-5169

Utah National Guard—NGB: *Collaborative Research Project*

A model system uniquely tailored to the demands of ecosystem-based education, tactical training, and environmental planning is being developed.

Working with Utah State University, the Utah National Guard Environmental Resources Office will present five research papers on a large ecosystem-based management and research project at Camp Williams, Utah, at the July 1995 annual meeting of the Ecological Society of America. The Camp Williams Project represents a new approach to ecosystem studies. By integrating spatial and temporal reports from biological surveys and ecosystem studies, the collaborative research team at Utah State

University is developing a model system uniquely tailored to the demands of ecosystem-based education, tactical training, and environmental planning. Ecosystem knowledge provides habitat-specific information necessary for making land-based tactical and environmental decisions.

POC: Dr. John L. Crane, Jr., (801) 576-3960

Aliamanu has used the Shared Energy Savings program to replace aging, inefficient air-conditioning systems, winning a 1993 State of Hawaii Governor's Energy Award.

Aliamanu Military Reservation, Hawaii—USARPAC: *Shared Energy Savings Program*

Age was taking its toll on the air-conditioning systems in Aliamanu's 2,600 housing units in 1990. The systems became less and less efficient and more expensive to maintain. In the meantime, the Army housing budget didn't hold the $10 million needed to replace the air-conditioning systems.

Army housing employees used the Shared Energy Savings program, which was made available through 1986 federal legislation, to replace the equipment, cut back on energy consumption, and save taxpayer dollars, too. Under Shared Energy Savings, a contractor buys and installs new, energy-efficient equipment. The contractor also maintains the equipment. Then, the Army and the contractor share the resulting savings in the electricity bill on a sliding scale over the length of the contract. The Aliamanu project was designed to cut energy use by 30 to 33 percent over the baseline, which was established based on 1988 and 1989 energy-consumption levels.

At the beginning of 1994, the contractor projected that energy savings for the year would be 19 to 21 million kilowatt hours. Because of hotter-than-normal weather, the contractor adjusted the projection to 17 to 18 million kilowatt hours. Final data for 1994 are not yet available but are expected to be close to the projections. According to data from the contractor, about 29,000 barrels of fuel is needed to produce 17 million kilowatt hours of electricity. Saving that much

energy results in a reduction in pollutants emitted into the air of about 16,000 tons of carbon dioxide, 73 tons of sodium dioxide, and 43 tons of nitrous oxide.

In 1991 before the Shared Energy Savings program began, Army housing officials estimated that if the average Aliamanu family paid its own electric bill, the family would pay about $166 a month. Now that the program is in place, that estimated bill would be about $130 a month. If the original goals can be attained, the estimated bill would fall even further to about $112 a month.

The program is considered so innovative and successful that it was nominated for, and won, a State of Hawaii Governor's Energy Award in 1993. The Aliamanu Shared Energy Savings program was among the first implemented by government agencies and the first of its size and scope.

POC: Keith Nishioka, (808) 438-9694

Makua Military Reservation, Hawaii—USARPAC: *Natural Resources Conservation*

Makua Military Reservation has realigned targets and increased firebreaks to protect 19 endangered species.

The reservation, located on the other side of the mountain from Schofield Barracks, provides realistic training for the 25th Infantry Division (Light) and is home to 19 endangered species: one mollusk (Oahu tree snail) and 18 plants. Several archeological sites exist on the installation.

The Oahu tree snail is the Army's greatest concern because fire and smoke from training activities threaten the snails' habitat. Training has been halted in the past because of the Oahu tree snail. Training resumed after protective measures were taken in close coordination with the U.S. Fish and Wildlife Service. A major accomplishment was the realignment of the targets within the Combined Company Arms Assault Course to eliminate fires started by tracers landing outside the firebreak. The project, accomplished by the 84th Engineer Battalion and funded under the environmental program, realigned existing targets closer to the center of the range. At the same time, maintenance of existing firebreaks around the perimeter of the entire maneuver training area was increased. Planning is also underway to construct a system of internal fuel breaks that would divide the maneuver training area into fire-management units and facilitate future controlled burns to reduce the fuel load. Because of Makua's remote location, range personnel have been equipped and trained as wildland firefighters. A fire-danger index system is in place that restricts certain training activities on fire-prone days. In addition to the one existing helicopter dip pond, design of two additional ponds is underway, with construction scheduled for completion in the summer of 1995.

POC: Dr. Raimo Liias, (808) 656-2878

Schofield Barracks has completed an inventory of its biological resources.

Schofield Barracks, Hawaii—USARPAC: *Protecting Endangered Ecosystems*

Under provisions of DoD's Legacy Resource Management Program, Schofield Barracks, Hawaii (along with Makua Military Reservation and Kawailoa Training Areas) has completed an inventory of its biological resources. The installations in Hawaii contain more endangered species than any other Army installations, according to agronomists and land managers. The goal of this project is to enhance protection of threatened and endangered rare ecosystems with a three-phase program, which includes identifying the location and status of resources; assessing management issues; and implementing key management actions. The Schofield Barracks program is currently at the second stage.

Among the agencies that assisted with the inventory were The Nature Conservancy and Colorado State University. The university sent biologists, botanists, and zoologists to help complete the enormous inventory task.

POC: Lance Toyofuku, (808) 438-9333

Fort Benning, Georgia—TRADOC: *Building Nests for the Red-cockaded Woodpecker*

Fort Benning has created new housing for the red-cockaded woodpecker after Hurricane Hugo damaged nesting sites.

Fort Benning is helping to build habitat for the red-cockaded woodpecker by creating hundreds of "artificial cavities" in which the birds can nest. Because many trees were damaged during Hurricane Hugo, the birds were unable to build nests in their natural manner of carving out a hole. The post environmentalists cut holes in trees and put in 10 inch by 18 inch wooden boxes. Each box has an entry hole 2 inches in diameter. The hole is reinforced with a metal plate (which prevents squirrels and other species from boring into the boxes). Fort Benning reports that the species population has seen a dramatic increase.

POC: Charles Ford, (706) 544-6206, or John J. Brent, (706) 545-4766

A female red-cockaded woodpecker, an endangered species, has been successfully transplanted to Fort Jackson to aid in increasing the species.

Fort Jackson, South Carolina—TRADOC: *Translocation of the Red-cockaded Woodpecker*

Fort Jackson and the Francis Marion National Forest endangered-species biologists have successfully moved a female red-cockaded woodpecker from the local national forest to Fort Jackson. This cooperative effort is an example of how like-minded agencies can help one another comply with the Endangered Species Act. Fort Jackson is continuing to cooperate with the U.S. Fish and Wildlife Service to move additional woodpeckers when warranted. In 1994 Fort Jackson developed the Endangered Species Management Plan for the woodpecker.

POC: Mark Dutton, (803) 751-5011

Presidio of Monterey/Fort Ord, California—TRADOC: *Protecting Endangered Species*

Restricted access to the installation's beaches and nonnative predator removal are designed to protect federally listed threatened species.

On 5 May 1994 the garrison commander of the Presidio of Monterey signed a memorandum that restricts access to the installation's beaches. The restriction was necessary for protecting the western snowy plover (*Charadrius alexandrinua nivosus*), a federally listed threatened species. The plover is a small shore bird that nests on the beaches from mid-March to mid-September. Signs have been posted that identify the area where access is restricted. Reduction of human activity on the beach during the sensitive nesting season will help eliminate the chance of a nest being stepped on or birds being harassed by pets. This action was in compliance with the Endangered Species Act of 1973, as amended.

In February 1995 the Presidio of Monterey will be participating in the U.S. Fish and Wildlife Service's Predator Management Program (PMP) in the Monterey Bay area by temporarily removing predatory animals from wildlife areas. The purpose and need for the program is to reduce populations of nonnative predators (e.g., red foxes and feral cats) to maximize the western snowy plovers' chances for survival. Removal of these nonnative predators will return the predator–prey interrelationships to a natural balance. The PMP has been implemented in the Monterey Bay area with excellent results.

POC: Sandi Maroni, (408) 242-2054

Pollution Prevention

The U.S. Army Materiel Command (AMC): *Reduction of Hazardous Waste*

AMC has improved industrial processes to reduce hazardous waste generation by 71 percent.

AMC reduced its hazardous waste generation by 71 percent between 1985 and 1992. It did this primarily through the use of improved industrial processes—a result of technology research and development in the field of pollution prevention.

POC: Bill Woodson, (309) 789-4062/5050, DSN 793-4062

An updated handbook will enable material developers to develop more environmentally friendly products.

The Army Acquisition Pollution Prevention Support Office—AMC: *Handbook of Environmentally Friendly Products*

The Army Acquisition Pollution Prevention Support Office (AAPPSO) has updated its handbook for materiel developers, to better enable them to develop products that will be more environmentally friendly throughout their entire life cycle. In addition, with assistance from the EPA, the Virginia-based AAPPSO launched an environmental-education program for schools in Virginia. AAPPSO made the program material available to major subordinate commands of the Army Materiel Command. Some of these commands plan to export the educational program to local school systems and communities.

POC: Lee Merril, (703) 274-9282, DSN 284-9282

Tobyhanna Army Depot, Tobyhanna, Pennsylvania—AMC: *A Comprehensive Environmental Plan*

The depot has implemented a comprehensive plan to reduce waste, recycle materials, and promote and preserve the environment. The depot has received several governor's awards for its programs.

Waste Reduction/Recycling

Tobyhanna Army Depot is the largest communications-electronics facility in DoD. The Pocono Plateau, where the depot is situated, is considered by the Nature Conservancy to be one of the last forty biodiverse places on the planet. Once the site of extensive hazardous waste, the depot has engaged in a comprehensive environmental plan since 1985. Its continuing goal is to reduce hazardous waste; promote the preservation and protection of the environment; and conserve natural resources. To date, that plan has yielded an 82 percent reduction in hazardous-waste generation, a 74 percent reduction in solid-waste generation, a 72 percent recycling rate, and a 32 percent reduction of recurring hazardous waste in streams. Recycling has conserved more than 51,800 cubic yards of landfill space.

Another depot innovation, developed with the Pennsylvania Department of Natural Resources, uses fly ash produced at the depot main boiler to encapsulate coal-mine refuse to prevent acid mine drainage. This innovation not only helps to protect area streams and wildlife but eliminates landfilling the fly ash, which would cost $25,000 annually. Other measurable results include improving wastewater treatment to the point where the receiving stream has been reclassified as a high-quality, cold-water fishery.

As a result of its environmental plan, the depot has saved approximately $90,000 in annual disposal costs and millions of dollars in future liability costs. In addition, the self-sustaining recycling program nets an average annual profit of $130,000 through the sale of recyclable materials. These funds are used for financing pollution abatement, energy conservation, resource conservation, morale/welfare programs, and occupational health and safety projects. In addition, these efforts and innovations can be adapted by other community

and business organizations. For example, the depot's pollution prevention plan was selected by the U.S. Army Environmental Center as a model plan to use in setting the standard for such plans Army-wide, and the depot's recycling program is suitable to any type of industry. Using this plan, Depot environmental personnel assisted in the development of the Monroe County Recycling Program and Solid Waste Management Plan.

Governor's Awards

Tobyhanna Army Depot in Pennsylvania garnered governor's awards in 1994, one for hazardous-waste minimization and another for recycling. In 1992, the depot received a governor's award for hazardous-waste minimization and, in 1993, one for recycling. The depot—the Army's largest communications/ electronics maintenance facility—reduced its generation of hazardous wastes by more than 80 percent since 1985. It was also cited by state officials for its "excellent" industrial recycling program.

POC: James D. Scott, (717) 895-7603, fax (717) 895-7005

The post's administrative vehicles have been converted from conventional fuels to compressed natural gas, significantly lowering fuel costs and pollution.

Fort Hood, Texas—FORSCOM: *Creating Fuel Alternatives*

One of the most promising programs recently launched at Fort Hood, Texas, involves converting the post's administrative vehicles from conventional fuels to compressed natural gas. Initial estimates indicate the conversion could significantly cut fuel costs for the installation, since compressed natural gas costs far less than gasoline yet provides about equal performance in properly converted vehicles. The primary purpose, however, is decreasing air pollution generated by fuels now in use. Other installations, such as Fort Gordon, Georgia, have installed alternative-fuel stations for their fleet of vehicles.

POC: Bobbie Lynn, (817) 287-8716, DSN 737-8716

Fort Belvoir, Virginia—MDW: *Recycling*

Fort Belvoir's award-winning comprehensive recycling program has as its goal recycling 50 percent of the post's waste in 1995.

Fort Belvoir's recycling program was honored as one of the best in the Washington, D.C., area at the Second Annual Metropolitan Washington Business Recycling Awards, announced 22 April 1994.

In 1993, Fort Belvoir recycled about 40 percent of its waste, including 1,800 tons of corrugated cardboard, under a comprehensive program. The ongoing effort targets all areas on the post, including office buildings, housing, warehouses, and other structures. It serves more than 20,000 people who live and work on the post.

Fort Belvoir's recycling program began in 1978, when the post established a central collection point for cardboard containers, and has expanded each year since. Last year, Fort Belvoir started recycling aluminum and bimetal cans collected from food service facilities, as well as scrap metal.

Continuing in its effort, Fort Belvoir has set a goal to recycle 50 percent of its waste in 1995.

POC: P. McClaughlin, (703) 806-4007

Winner of the 1994 Department of the Army Installation Pollution Prevention Award, the TX ARNG has decreased hazardous and special wastes by more than 50 percent, resulting in significant savings to taxpayers.

Texas Army National Guard—NGB: *Winner of Major Environmental Award*

The Texas Army National Guard (TX ARNG) has been named the first-place winner of the 1994 Department of the Army Installation Pollution Prevention Award, to be presented in April 1995. The TX ARNG was named for the award in recognition of its outstanding pollution-prevention programs, which have caused a decrease in the generation of hazardous and special wastes by more than 50 per-

cent, as well as resulting in significant savings of taxpayer dollars. Having formed the Pollution Prevention Committee (PPC) in its commitment to protecting and preserving the environment, the TX ARNG has implemented several new programs, including a Diesel Fuel Recycling Program, under which more than 119,000 gallons of fuel were reprocessed in 1994, saving the National Guard approximately $415,000. The filtration system has virtually eliminated diesel waste at Army National Guard facilities throughout the state of Texas.

POC: Master Sergeant Bob Dashman, (512) 465-5059

Fort Shafter, Hawaii—USARPAC: *Hazardous Waste Minimization Program*

Fort Shafter has reduced solvent use by 91.7 percent over the past two years.

IX Corps (Reinforcement)/9th U.S. Army Reserve Command set an objective to surpass the Department of Army Hazardous Waste Minimization goals and requirements. Many initiatives support this objective, but the principal goal at Fort Shafter was to eliminate the source of the solvent waste stream. That meant eliminating the use of solvents in the command, which had been using about 300 gallons a year in its facilities throughout the Pacific. The plan called for accomplishing the goal in three phases.

The first step was taken early in 1993 when the command replaced the solvents used for cleaning weapons with nontoxic, biodegradable degreasers/cleaners. The second step attacked the primary source of the waste stream—the cleaning solvent PD-680. PD-680 was used extensively in maintenance-support facilities and created the greatest volume of waste. A search of alternatives resulted in the purchase of 11 BIO-T parts-washer systems, which use a citrus-based, biodegradable degreaser/cleaner instead of PD-680. The new washers were installed in all maintenance and repair facilities in the command in September 1993, and the old washers were pulled from service. Immediately, reports came in that the new washers performed well, and users reported an additional benefit: improvement in the air quality around the washers. After a period of use, the command determined that a viable alternative to PD-680 had been found. Although this step did not entirely eliminate the use of PD-680 by the command, a reduction of 91.7 percent has been attained, based on 1992 PD-680 use of 302 gallons and 1994 use of only 25 gallons. Other benefits include reduced health and safety risks to personnel exposed to solvents; reduced incidence of used oil contaminated by solvents; and an overall reduction in hazardous-waste-disposal costs.

The last step in the plan is to eliminate the remaining solvents from the command. The command intends to achieve that objective within the next two years. Pollution prevention and hazardous-waste minimization can be effective at this small scale as well as on a factory scale.

POC: Wayne Mitsko, (808) 438-1504

The 17th Area Support Group expanded its recycling program and has reduced ash production from 775 to 660 tons.

17th Area Support Group, Honshu, Japan—USARPAC: *Recycling*

In January 1992 the 17th Area Support Group began an expanded and energetic recycling program with the objective of extending the life of the Camp Zama incinerator. At that time, the installation selected the following from the waste stream for recycling: aluminum, tin, glass, cardboard, newspapers, magazines, tires, automotive batteries, oil, and paint. From the very beginning, the program was successful.

During 1993 and 1994 the program objectives were to improve participation in the program; further reduce the noncombustibles entering the waste stream going to the incinerator; further reduce the output to the incinerator ash-pit; and lower maintenance costs for the incinerator. The increasingly successful recycling program saw the ash production reduced from 775.46 tons in 1993 to 660.23 tons in 1994.

Community participation improved in 1993 when the installation stepped up its efforts to publicize the program through newspaper articles and a letter sent directly to each family. As an added incentive, the installation began offering a chance to win Burger King™

certificates in a monthly drawing. People could enter to win when they dropped off their recyclables at collection points. Participation further improved starting in May 1994, when the installation instituted curbside collection in the family-housing areas of the installation's three communities. A random sampling showed that 95 percent of families participate in the curbside collection of recyclables.

POC: Gary Mackey, DSN 263-7320

Tank Automotive & Ammunition Command, Warren, Michigan—AMC: *Hazard Tracking System*

The Hazard Tracking System helps users assess the risk and status of a military hazard.

The TRW Company, under a System Engineering Analysis contract, has developed a Hazard Tracking System at the Tank Automotive & Ammunition Command. The tracking system is currently being used by the Combat Mobility System program and is being reviewed for consideration in other programs. It has also been sent to the Army Safety Center for their consideration as a candidate for the hazard tracking system to be used throughout the Army. The tracking system is an IBM™-compatible program and is compiled in a method that allows it to operate independently from any application. The program is provided with a manual in WordPerfect 5.1™. It also has been provided with a number of flexible features that allow modification to the program by the users. The tracking system includes a matrix that allows developing system programs to display their current system's hazard risk-assessment status as well as the status for the system to be fielded. This provides a means to allow an interim solution to be identified, assessed, and used for the prototype system, while also allowing that solution to be assessed for the system to be fielded.

POC: Donald Lemons, (810) 574-5636

A model has been developed that will eliminate hazardous materials in all UH-60 helicopter maintenance.

U.S. Army Aviation Troop Command, St. Louis, Missouri—AMC: *Elimination of Hazardous Materials*

The UH (Utility Helicopter)-60 project manager, with support from a contractor and U.S. Army Aviation Troop Command functional elements, developed a model to eliminate from all UH-60 maintenance documents requirements to use hazardous materials. The model consists of several phases, with multiple steps in each phase. The first priority was development of a database containing the technical documents, products, maintenance actions, and alternatives. The second step was development of a prioritization that classified ozone-depleting compounds as the highest priority, followed by other materials that have been identified by the U.S. Environmental Protection Agency as being major industrial pollutants. Once these two steps had been taken, the next task was to identify all maintenance steps that require the use of any of the materials to be eliminated, to determine an appropriate substitute, to verify the substitute's capability to do the job effectively, and to initiate the necessary changes in the maintenance documents. Efforts during the past year have resulted in completion of identification, development of appropriate substitutes, and the onset of verification. Actions are continuing toward completion of verification and the introduction of revised guidance into the documents. This model has the potential to serve as a blueprint for all other project managers and to save the Army valuable dollars.

POC: Tammy Nelson, (314) 263-2178

U.S. Army Ammunitions and Chemical Command, Rock Island, Illinois—AMC: *Depleted Uranium (DU) Storage Computer Program*

The computer program determines the total quantity of DU ammunition stored at installations, allowing depleted uranium stocks to be managed better.

Safety specialists at Seneca Army Depot Activity in Romulus, New York, have developed a computer program to determine the total quantity of depleted uranium (DU) ammunition stored at an installation. This will prevent installations from exceeding their Nuclear Regulatory Commission License limits as a result of not being able to track the various types of depleted uranium ammunition. When ammunition is received, it is added to the program, which automatically recomputes the total quantity as well as the quantity by National Stock Number. This system allows the licensee to rigorously manage DU stocks.

POC: Thomas Stincic, (607) 869-1261, DSN 489-5261

Source reduction techniques at Fort Jackson have reduced the amount of hazardous waste generated by 59 percent.

Fort Jackson, South Carolina—TRADOC: *Hazardous Waste Reduction*

Fort Jackson reduced the amount of hazardous wastes generated from 259,307 pounds in Calendar Year 1992 to 106,367 pounds in Calendar Year 1994, a reduction of 59 percent. Source-reduction techniques, including process change and hazardous-material control, accounted for the majority of the reduction. Significant savings were achieved when the number of parts-cleaning units were decreased and service intervals were increased. In addition, on-site filtration of spent solvent was implemented at one of the activities, increasing the life of the solvent and reducing the amount of hazardous waste generated.

POC: Barbara Williams, (803) 751-6858/5011

Fort Leonard Wood, Missouri—TRADOC: *Recycling*

A new curbside recycling program saves the post money in waste disposal and brings in additional revenue through the sale of recyclables.

In 1994 Fort Leonard Wood, Missouri, took a decisive step toward reducing the amount of solid waste flowing to Missouri landfills by establishing a curbside recycling program. Not only will this program save the post money in waste disposal, but it will also bring in additional revenue through the sale of the recyclables.

Under the curbside recycling program, each on-post family receives a container in which to store recyclable materials such as glass, aluminum, and newspapers; however participation is voluntary. The post pays a contractor $4,000 per month to go to each home to collect the recyclable materials, sell them, and return the proceeds to the post for use in various projects.

Post environmental specialists feel that this program will be more effective than an earlier plan that relied on each family to take the items to a drop-off point.

By increasing the amount of recycling, post officials hope to save space at the much-burdened state landfill. Using traditional disposal methods, Fort Leonard Wood buried more than 10,000 tons of refuse in Missouri each year, at a cost of $32 per ton. With the new program, Fort Leonard Wood officials expect to spend significantly less to dispose of refuse.

Similar efforts in the neighboring Missouri community, Cape Girardeau, have increased the percentage of recycled refuse from 2 percent to 16 percent, officials said.

POC: Deborah Potter, (804) 727-2265

Training & Doctrine Command—TRADOC: *Environmental Care Kit and Environmental Performance Plan*

A kit helps TRADOC purchasing agents specify recycled products. The environmental plan encourages investment in projects that have rapid paybacks in environmental areas.

To increase environmental awareness and encourage recycling, TRADOC has developed an "Environmental Care Kit." The kit identifies the 20 most commonly purchased supply items; identifies manufacturers of recycled products; provides TRADOC purchasing agents with samples, specifications, costs, and manufacturer POCs; includes a videotape discussing the recycled product kit; and encourages activities to request recycled products. For example, the kit contains a sample of a rug made of recycled plastics.

TRADOC has also developed the TRADOC Environmental Performance Plan, a proactive initiative for investing in projects that have rapid paybacks, reducing future compliance costs. Under the performance plan, TRADOC will give seed money to installations that can demonstrate a viable idea.

POC: Phil Prisco, (804) 727-3300

Leftover household cleaning products are being taken to the self-help store on the base for proper disposal.

Hanau, Germany—USAREUR: *Recycling Household Cleaning Products*

U.S. Army residents of Hanau, Germany, drop off leftover household cleaning materials such as bleach, ammonia, detergents, polishes, and drain openers at their local Army self-help store.

POC: Lieutenant Colonel Leonard Hassell, 011-49-6221-57-7328, DSN 370-7328

100th Area Support Group—USAREUR: *Managing Hazardous Waste*

This program educates occupants of miliary housing areas to segregate items harmful to the environment.

Household hazardous waste is collected quarterly in all communities of the U.S. Army's 100th Area Support Group in Germany. A mobile "poison wagon" visits these communities to collect, pack, and dispose of hazardous waste in accordance with German law. The program has educated occupants of military housing areas to segregate items harmful to the environment.

POC: Lieutenant Colonel Leonard Hassell, 011-49-6221-57-7328, DSN 370-7328

Restoration and Cleanup

The U.S. Army Environmental Center: *Site Characterization and Analysis Penetrometer System*

SCAPS detects underground contaminants more quickly and economically than conventional methods.

The Army Environmental Center, in cooperation with the Corps of Engineers Waterways Experiment Station, the Navy, the Air Force, and various universities, has developed the portable Site Characterization and Analysis Penetrometer System (SCAPS). The system uses a metal rod forced beneath the ground and laser-induced fluorescence sensors to measure underground concentrations of petroleum, oil, and lubricants (POL). The system's major benefit is that it helps to locate concentrations of these contaminants and characterize soil conditions much more quickly and economically than conventional methods of sampling such as drilling wells for water samples and boring for soil samples, which are sent off to laboratories to be analyzed. The three services are field testing SCAPS.

POC: George Robitaille, (410) 671-1576, DSN 584-1576

Riverbank Army Ammunition Plant, Riverbank, California—AMC: *Accelerating Cleanup*

Groundwater treatment systems are being expanded; groundwater cleanup has been initiated; and a former landfill area will be capped.

On 23 March 1994 the Riverbank Army Ammunition Plant in California became the first DoD installation to sign a site-wide Record of Decision (ROD)—an official agreement with the state and U.S. Environmental Protection Agency that spelled out cleanup measures to be taken. The ROD signified the completion of environmental studies under the cleanup program at Riverbank and marked the initiation of all final cleanup actions.

The actions required by the ROD include the installation's expanding the groundwater treatment systems, which clean up plumes containing chromium and cyanide, and capping the Riverbank's former landfill area to ensure that residual materials in the soil no longer get into the groundwater.

The installation has undertaken several removal actions to provide a clean water supply to the off-post residents, to initiate groundwater cleanup, and to remove hazardous levels of zinc at the ammunition plant's evaporation/percolation ponds near the Stanislaus River.

POC: Jim Gansel, (209) 869-4239, DSN 466-4239

The time required for reviewing primary documents and resolving problems has been reduced by three to five months, saving $30,000 on each document.

Sierra Army Depot, Herlong, California—AMC: *Accelerating Restoration Activities*

This installation has successfully conducted a program called the Accelerated Team Review Concept (ATRC). The ATRC has speeded up the Installation Restoration Program at seven hazardous-waste sites by reducing the time required for reviewing primary documents and resolving problems. The ATRC can enable the Army to complete an entire primary document in one or two meetings among personnel from the regulatory agencies and the Army. Therefore, the processing time for a Federal Facility Agreement can be reduced by three to five months, saving the Army $30,000 on each primary document.

POC: Jim Ryan, (916) 827-4600

Sacramento Army Depot, Sacramento, California—AMC: *Cleaning Up Soil*

A new technique for removing the industrial cleaning solvent TCE reduces the time required for removal from years to one week and the number of steps from several to just one.

Sacramento Army Depot completed a pilot program in September 1994 that removed more than 500 pounds of the industrial cleaning solvent TCE from the groundwater, surface water, and soil. The project was done in conjunction with the Water Board and state and local Environmental Protection Agency. The technique, called "air sparging," cleans in a one-week, one-step process, in contrast to former methods that had several steps and took several years. The new system also processes the TCE-containing materials into a product that can be recycled. Since the completion of the pilot program, no further water or soil treatment has been needed.

POC: Bob Ladado, (916) 388-2180, DSN 839-3574

This project is the first in the United States to use soil leaching successfully to supplement soil washing on a full-scale soil cleanup.

Twin Cities Army Ammunition Plant, New Brighton, Minnesota—AMC: *Developing Environmental Technologies*

An innovative method for removing metal contamination from soils is underway at Twin Cities Army Ammunition Plant. The post wanted to curtail conventional methods of solid cleanup, including landfilling, solidification, and stabilization, because they are temporary and can lead to the transfer of contamination to other sites or storage areas.

This installation's new process involves the combined technologies of soil washing and soil leaching. Soil washing removes the large metallic particles and reduces soil volume, while soil leaching dissolves the remaining smaller metallic particles and ionic metals. Soil washing has received much attention in recent years, but soil leaching is a new cleanup action that addresses the limitations of soil washing. This project is the first in the United States to use soil leaching successfully to supplement soil washing on a full-scale soil cleanup.

Twin Cities Army Ammunition Plant washing/leaching operations were initiated on a 10-acre former ammunition-disposal burning area during the fourth quarter of Fiscal Year 1993. A majority of the metal contaminants, primarily lead, was concentrated in the upper two feet of soil in a 3-acre area. However, contamination was also found as deep as 10 feet in the disposal trenches. Groundwater had not been affected, since it was nearly 120 feet below the ground surface.

As of 27 August 1994 approximately 7,100 tons of contaminated soil had been treated by the washing/leaching process. Treated soil that meets the prescribed cleanup levels for lead and seven other metals will be backfilled at the excavation sites. Completion of cleanup operations is scheduled for the summer of 1995, with total soil processed estimated at 15,000 tons.

POC: Marty McCleery, (612) 633-2301, ext. 651; DSN 798-1500, ext. 651

Umatilla Depot Activity, Hermiston, Oregon—AMC: *Bioremediation of Explosives-contaminated Soils*

Composting is being used to treat contaminated soils at washout plant lagoons, yielding a 40 to 50 percent reduction in costs.

Umatilla Depot Activity is using composting as the full- scale remedial action treatment for 11,000 cubic yards of contaminated soils at the lagoons. Pilot-scale, composting treatability studies have demonstrated the ability of composting to achieve cleanup levels after 40 days of treatment with a destruction and removal efficiency of greater than 99.0 percent. A feasibility study estimates treatment costs of $206 to $766 per ton for quantities of 1,200 to 30,000 tons, which may result in a 40 to 50 percent cost reduction, in comparison with incineration.

Composting mixes natural organic elements, such as manure, wood chips, alfalfa, and vegetable-processing wastes, with 30 percent contaminated soil and adds water to 50 percent of moisture-holding zero capacity. The process utilizes native, aerobic, thermophilic microorganisms and requires no inoculation. The elements serve as a source of carbon and nitrogen, which help degrade explosives under co-metabolic conditions.

Composting is suitable for soils and sludges. A moderate amount of contaminated wastewater can be treated with soil, since the process consumes water at a rate of approximately one gallon per cubic yard per day of treatment. The process does not appear to be particularly sensitive to soil type. In addition, composting produces no chemical air emissions and no leachate and does not require dewatering upon completion of treatment. Composting residues will support growth of vegetation after treatment, unlike incinerator ash or soils treated by solidification.

This is the first time bioremediation using a composting process will be used for large-scale treatment of explosives-contaminated soil, and this is the first Superfund site to use the process.

POC: Brad Still, at (503) 564-5294.

Fort McPherson, Georgia—FORSCOM: *Waste Minimization through Improved Focused-sampling Protocol*

Using a new, cost-effective method, the post has removed more than 60,000 cubic yards of incinerator ash, allowing the area to be used for a new barracks without costly excavation delay.

At Fort McPherson, a site once used as a dumping ground for incinerator ash will now be the site of a new barracks, as a result of the post's removal of hazardous materials. Not only did the post excavate the material, but it used a new method that saved both time and money.

Approximately 60,000 cubic yards of material was excavated from the site and stockpiled. The soils were segregated into 1,000-cubic-yard stockpiles for characterization. Approximately one-third of the material was determined to be nonhazardous and was transported to a Subtitle D permitted landfill in Georgia. The remaining two-thirds was characterized as hazardous waste. Land-disposal restrictions require treatment prior to landfilling.

Under former procedures, all the soil would have had to be treated, even though some portions contained no hazardous materials. However, the Directorate of Public Works–Environmental Division (DPW–ENV) staff devised a protocol to characterize more clearly the large stockpiles. Each stockpile was divided into smaller stockpiles of approximately 250 cubic yards and was sampled by DPW–ENV to determine if the material in that quarter of the stockpile was hazardous. Approximately 50 percent of the soil was determined to be nonhazardous and was double-tested for accuracy.

Using this protocol, DPW–ENV was able to cut the cost of treatment and the amount of material to be treated by approximately 50 percent, saving more than $640,000. This more efficient procedure also allowed the construction of a new barracks to proceed without costly excavation delay.

This methodology could be used by any installation faced with managing a large quantity of waste that is presumed to be hazardous.

POC: David A. Heins, (404) 752-3702, DSN 572-3702

Fort Polk, Louisiana—FORSCOM: *Preventing Soil Erosion*

Fort Polk, the USDA, and the U.S. Forest Service have reduced erosion by planting vetiver grass and vegetative terraces. They are also investigating other grasses to protect training areas from erosion.

Fort Polk, Louisiana, constantly experiences soil erosion created by troops' digging, daily maneuvers, and continual movement of tanks. However, a plant called vetiver grass is now stabilizing the post's soil.

The grass was planted by a partnership of Fort Polk's Environment & Natural Resources Management Division (ENRMD), the U.S. Department of Agriculture's Soil Conservation Service (SCS), and the U.S. Forest Service. The agencies joined forces in 1989, and in 1993 established the Satellite Plant Materiels Center to assess and meet plant-materiel needs for military-training areas.

One of the most significant accomplishments of the ENRMD/SCS partnership is the concept of vegetative terraces. Launched at Fort Polk in 1990, the concept involves walls of plants grown along the contour of the land. Sediments accumulate on the uphill side of the plant buffer and eventually convert erodible slopes into stabilized shelves where native plants can grow. The concept is simple and cheap compared to moving dirt.

Vetiver grass, which is indigenous to India, helps contain the soil with strong 12-foot roots and helps the land heal itself. By 1991 Fort Polk's vetiver grass had grown thick and tall, forming tight hedgerows. The result was a plant that acts like a huge filter, straining out sediment as water flows through. Vetiver grass reduced Fort Polk's cost of repairing the land by 60 percent.

Not all Army installations can use this plant, however, because it is a tropical grass that only thrives in warm climates. The Fort Polk/

SCS partnership is currently looking into other grasses such as miscanthus, penni, and switchgrass to protect against erosion in colder climates. Soil conservation specialists are currently nurturing 4,000 pots of grasses and planning to cultivate 10,000 more for future plantings on Fort Polk training areas.

POC: Charles Stagg, (318) 537-6244

The Army National Guard in Missouri—NGB: *Underground Storage Tank Removals*

Forty-nine underground storage tanks in New Mexico and 29 in Missouri have been removed, surpassing requirements.

Army National Guard sites in Missouri and New Mexico are now completely free of underground storage tanks (USTs). Both states have been involved in aggressive and proactive UST-removal programs for approximately the past four years. Forty-nine USTs, ranging from 7 to 26 years old and from 600 to 10,000 gallons, were extracted in New Mexico. Twenty-nine USTs, ranging in age from 17 to 52 years and from 100 to 9,000 gallons were extracted in Missouri. No current requirements to remove these types of tanks exist, especially at such an expedited rate.

POCs: Robert J. Gondek, (505) 473-3882; Major Kenneth MacNevin, (314) 751-9846

Army Research Laboratory, Watertown, Massachusetts—AMC: *Radiological Remediation*

The Army has been successfully remediating radiological facilities and sharing "lessons learned."

For the past several years the Army has been conducting a massive radiological remediation of Nuclear Regulatory Commission licensed facilities at the Army Research Laboratory site in Watertown, Massachusetts. The radiological facilities included a research reactor and various facilities used for the machining, milling, forging, casting, and plating of depleted uranium. The radiological remediation, typically referred to as "decommissioning" in the health physics profession, was conducted as an integral part of the overall environmental remediation of the Watertown site. The site was identified in 1988 for base closure and is scheduled to cease laboratory operation in September 1995.

The Army Research Laboratory has been presenting "lessons learned" briefings and reviewing other cleanup plans. The briefing stresses that state environmental laws may have jurisdiction over radioactive-material remediation efforts, even though historically, radioactive-material cleanup has been regulated by health and safety agencies and regulations. Environmental laws may rely upon risk-assessment methods to determine acceptable cleanup standards and may be more restrictive than the conventional dose-based, cleanup standards. It is necessary to meet with both environmental and health-and-safety state and federal agencies to establish (in writing) the cleanup standards early in the planning process, so that all survey and cleanup efforts can be appropriately designed and conducted.

POC: Michael Borisky, (301) 394-2218

The new accelerated approach will serve as a model for environmental restoration at other military installations.

Presidio of Monterey/Fort Ord, California—TRADOC: *Accelerating Processes at Superfund Sites*

Fort Ord Environmental Division [now the Presidio of Monterey, Directorate of Environmental and Natural Resources (DENR)] has developed an Accelerated Action Plan (AAP) for performing remedial investigations and feasibility studies (RI/FS) at Superfund sites. The new approach will serve as a model for environmental restoration at other military installations.

Developed in conjunction with the U.S. Army Corps of Engineers (Sacramento District) and their contractors, the new method being implemented at the former Fort Ord is expected to save the U.S. Army over $10 million and at least two years in time.

The classic protocol for performing an RI/FS at a Superfund site follows a laborious "stepped" approach. Each step is completed consecutively and requires extensive review. Review time often lags, and the national average for the completion of the regulatory RI/FS process is almost ten years.

The AAP describes a rolling approach to conducting an RI/FS: the classic steps are combined, when possible, to consolidate review periods and eliminate lag time. Each site is on an independent schedule, allowing sites with low levels of contamination to be investigated quickly and cleaned up. The clean parcels are then ready for sale.

POC: Sandi Maroni, (408) 242-2054

Presidio of Monterey/Fort Ord, California—TRADOC: *Restoration Advisory Board*

An RAB serves as a forum for community members to discuss and exchange information about the installation's environmental restoration. Workshops help them understand the challenges of the restoration process.

In September 1993, the Department of Defense issued guidance concerning "Fast Track Cleanup" at closing installations, which included a requirement to form a Restoration Advisory Board (RAB). Further DoD guidance defined the purpose of the RAB as a forum for discussion and information exchange about the installation's environmental restoration or cleanup program.

Fort Ord's RAB was created from the Fort Ord Technical Review Committee at a public meeting held on 7 February 1994. The committee consisted of an 80-member group that included community members and representatives of environmental regulatory and local governmental agencies. This committee was expanded to include additional community members in accordance with the President's Five Point Plan, and it became the Restoration Advisory Board.

Recently, the Directorate of Environmental and Natural Resources, in conjunction with the Corps of Engineers, Sacramento District, presented a series of workshops to the RAB, which provided specialized background information to assist RAB members in understanding the challenges of the restoration process.

The workshops were presented during the late spring and summer of 1994 and included the following topics: Fort Ord Field Trip; Environmental Regulations; Fort Ord Geology/Hydrogeology; Field Investigations and Data Management; Risk Assessment; BRAC Issues and Property Transfer; OEW at Fort Ord; and Treatment Technologies.

Each RAB member received a workshop binder that contained overheads and reference materials. The workshops were videotaped for use as reference tools. These workshops were very successful and will become an Army Environmental Center (AEC) model for future RABs at other installations.

POC: Sandi Maroni, (408) 242-2054

Approximately 350 pounds of trash and recyclables have been removed from the installation's beaches.

Presidio of Monterey/Fort Ord, California—TRADOC: *Coastal Cleanup*

On 17 September 1994, fifteen volunteers participated in the annual Adopt a Beach Coastal Cleanup on the former Fort Ord's beaches. The Directorate of Environmental and Natural Resources sponsored the event, at which approximately 350 pounds of trash and recyclables were removed from the installation's beaches. The installation looks forward to participating in the National Adopt a Beach Coastal Cleanup in 1995.

POC: Sandi Maroni, (408) 242-2054

Presidio of Monterey/Fort Ord, California—TRADOC: *Underground Storage Tanks*

A tank-management plan will guide the orderly removal, replacement, or upgrading of existing USTs.

To protect the environment and comply with federal, state, and local regulations, the Army at the former Fort Ord has developed an Underground Storage Tank (UST) Management Program. (The UST Management Program is not part of the Superfund investigations and cleanup program.) The Army has inventoried its USTs and assessed the condition and regulatory status of each one.

On the basis of the results of the inventory, the installation has prepared a tank-management plan. This plan will guide the orderly removal, replacement, or upgrading of existing USTs. The criteria for

effectively managing USTs in the future are an important part of the UST Management Plan, especially because of base-closure and property-reuse considerations.

Nineteen UST cleanup projects are currently in various stages of completion at the Presidio of Monterey, the Presidio of Monterey Annex, and the former Fort Ord, including Fritzsche Army Airfield. Several of these sites are nearing completion and clean closure after three to four years of investigative and remedial work. More than 80 USTs are scheduled to be removed in Fiscal Year 1995.

POC: Sandi Maroni, (408) 242-2054

Training and Awareness

Army Research Laboratory, Adelphi Laboratory Center, Adelphi, Maryland—AMC: *Managing and Enhancing Natural Resources*

Nonprofessionals are being educated and trained to identify wetlands and to understand their responsibility in preserving these areas from harm.

The Natural Resources Management Plan for the Adelphi Laboratory Center and its subinstallations—Blossom Point Field Test Facility and Woodbridge Research Facility—are administered by the management agronomist at Division of Public Works and the division's fifteen wildlife conservation officers. They often work with members from the community, Maryland Department of Natural Resources, and the Humane Society of the United States.

Under the plan, the following have been accomplished in the area of training and awareness:

With the support of the chief, Division of Public Works, and the site operations director, twelve nonprofessional natural-resources individuals receive education and training in wetlands identification and responsibility. These individuals work at the two field sites as maintenance mechanics. During the course of their normal duties, they have the potential to make decisions that could ultimately result in the degradation of this valuable resource. This training is intended to enable the mechanics to become more sensitive to, and aware of, the need to preserve these areas from harm.

A program was initiated in conjunction with Northern Virginia Community College, which allows the use of the property as an outdoor classroom. Students can utilize the facility to gain field experience in courses ranging from wetlands delineation to environmental sampling.

POC: Don Brower, (301) 394-4511, DSN 290-4511

An environmental-education program is designed to get fifth graders excited about environmental issues. Via Internet, the program has the potential to reach a large number of students.

Lake City Army Ammunition Plant, Independence, Missouri—AMC: *Educating Fifth Graders about the Environment*

Lake City Army Ammunition Plant (LCAAP) has created a computer-based environmental education program targeting fifth graders. Called Target Community Outreach (TCO), its purpose is to deliver the message of environmental responsibility and stewardship to area students by covering: clean water; water conservation; acid rain; fish and wildlife conservation; recycling; pollution prevention; and solid-waste management.

Using a science-fiction script created by teacher and LCAAP volunteers, the program presents students with problems of surviving on a new planet. Environmental lesson plans have been created and made available to 54,000 students in six targeted school districts from inner-city to rural areas. Students access the program via the ShareNet Telecommunication System. The backbone of the program is a cadre of fifth-grade teachers from each of the six school districts, who team with the Lake City volunteers. The program was carefully designed to be entertaining and educational through the use of an exciting science-fiction adventure, "Star Date 2220," and creative hands-on activities. Program founders believe that this program will plant seeds to enhance critical-thinking and decision-making skills of students. A goal of the program is to develop children into environmentally responsible adults.

Lake City Army Ammunition Plant is a government-owned, contractor-operated facility located in Independence, Missouri. The managing contractor of the plant, Olin Corporation, funds the TCO program through the Olin Charitable Trust. Currently, the Olin Corporation is investigating expansion of this program to several other Olin sites. Because of the accessibility of the ShareNet system via the Internet, potential access to the program is unlimited.

The LCAAP program received a matching grant from the National Fish and Wildlife Foundation to ensure that fish and wildlife conservation is addressed in the program.

POC: W.L. Czeschin, (816) 796-7335 or (816) 796-6231

Tobyhanna Army Depot, Tobyhanna, Pennsylvania—AMC: *Community Relations*

The depot is working with local, state, and national organizations to manage fish and wildlife and to support environmental cleanup.

Community relations and cooperation in natural-resources management have improved significantly during the past three years. The depot works with the Pennsylvania Game Commission on black bear and white-tailed deer management and with the Pennsylvania Fish Commission U.S. Fish & Wildlife Service on fish stocking and licensing. Environmental-management personnel participated in the Pocono Mountain Chamber of Commerce, Environmental Committee; provided information to support Harvard University graduate students in planning strategies for Monroe County; participated in the National Park Service's cleanup of six miles of shore along the Delaware River; and signed an agreement to remove litter four times per year from a two-mile portion of Interstate 380, under the state's Adopt a Highway Program.

POC: James D. Scott, (717) 895-7603, fax (717) 895-7005

The course provides better instruction on health and environmental risks of depleted uranium (DU) to users of DU ammunition and tank armor.

U.S. Army Ammunitions and Chemical Command—AMC: *Depleted Uranium (DU) Training Course*

Knowledge is key to the understanding of and effective use of technical material. So that a high degree of customer service and support can be provided to Army units throughout the world, a DU training course was developed and presented for U.S. Army Ammu-

nitions and Chemical Command, Logistic Assistance Representative. These representatives go on-site, providing support to users of DU ammunition and tank armor. Through this course, users will get better information regarding DU.

POC: Lee Rouland, (309) 782-2124

Fort Gordon, Georgia—TRADOC: *Environmental Awareness Education*

A pilot program encourages installation community members to participate in developing environmental standards.

A pilot program in installation community planning is in effect at Fort Gordon. The program includes aggressive education about the environment. Everyone who lives and works on the installation has the opportunity to comment on what he or she believes the community environmental standards should be.

POC: David A. Martin, (706) 791-2403, DSN 780-2403

An educational program on South Carolina's coastal natural resources that was filmed at the installation is being distributed in the United States and its territories.

Fort Jackson, South Carolina—TRADOC: *Site of Natural Resources Television Program*

The Environmental and Natural Resources Division has produced an educational television show on the natural resources found on the shores of South Carolina. Educational Television's nationally syndicated "Nature Scene," featuring naturalist Rudy Mancke, was filmed at the installation in April 1994. The show was televised in South Carolina for the first time in December 1994. Beginning 19 February 1995, the show will be available to hundreds of educational television networks in the United States, Guam, Puerto Rico, and the Virgin Islands for two years.

POC: Mark Dutton, (803) 751-6821

Fort Sill, Oklahoma—TRADOC: *Hands-on Training Center*

A unique centralized facility provides training that has been credited with reducing environmental pollution and degradation.

Created as a TRADOC environmental initiative, the new Center for Environmental Initiatives and Hands On Training (CEIHOT) at Fort Sill provides resident training for personnel from DoD agencies worldwide. The center is unique in that is provides a centralized facility for all types of environmental training, and it heavily emphasizes hands-on laboratory activities. Courses cover environmental awareness and compliance; pollution prevention; hazardous-waste management/response; land rehabilitation/management; and fish and wildlife management. Many of the courses address specific unit problems and responsibilities, and the training has been credited with reducing environmental pollution and degradation. More than 6,500 military and civilian personnel from all services were trained in more than 70 courses during Fiscal Year 1994, and CEIHOT expects to serve more than 10,000 students during Fiscal Year 1995.

POC: Ron Barnett, (405) 442-2715

Environmental-training support packages, videotapes, and training circulars help leaders to integrate environmental programs into unit training and operations.

U.S. Army Engineer School, Fort Monroe, Virginia—TRADOC: *Development of Environmental Training*

Training Support Package

The U.S. Army Engineer School has developed 13 environmental-awareness training-support packages (TSPs) and a videotape (TVT 5-56), "The soldier and the environment," for TRADOC military schools. The 13 TSPs have been integrated into classroom training from initial entry training through the precommand course as part of common-core instruction. Every active, reserve, and National Guard soldier will view this tape upon entering the Army. Each TSP consists of the videotape, 35-mm slides, a student handout, and instructor guide.

POC: Peter Kushnir, (804) 727-2265, DSN 680-2265

Training Circular

The Engineer School has also developed Training Circular (TC) 5-400, "Unit leader's guide for environmental stewardship." This TC shows leaders how to integrate effectively the Army's environmental program into unit training and operations. The Engineer School also has a contract to develop the Unit Environmental Compliance Officer's course. Currently, a draft course management plan and program of instruction are available. The course will not only offer basic environmental knowledge but will also allow installation trainers to develop state, local, and installation portions. The TC was fielded in September 1994 and will reach every unit in the Army.

POC: Carolyn Reynolds, (804) 727-2597, DSN 680-2597

Vilseck, Germany—USAREUR: *Environmental Education for Families*

The most up-to-date recycling procedures and energy conservation measures are being taught to soldiers and their families.

Self-help classes for soldiers and their families processing into the Army community in Vilseck, Germany, include presentations on recycling procedures and energy conservation. Class attendees receive the most up-to-date information on environmentally friendly measures that they can follow.

POC: Lieutenant Colonel Leonard Hassell, 49-62-2157-7328, DSN 370-7328

Multidisciplinary Approaches

Joliet Army Ammunition Plant, Wilmington, Illinois—AMC: *Formation of Joliet Arsenal Citizens Planning Commission*

A land-use plan will greatly reduce the cost and time required for cleanup. The land will be used for a national tallgrass prairie park, a national cemetery, and a county landfill, in addition to industrial elements.

When the Department of the Army closed Joliet Army Ammunition Plant in 1993, U.S. Representative George Sangmeister formed the Joliet Arsenal Citizens Planning Commission. In 1994 the commission approved a plan for use of the installation. The plan was submitted to the Army and was incorporated into Joliet's cleanup program.

The commission (which included Army officials; conservation groups; and local, county, state, and federal government representatives) collaborated for several months on the detailed plan. The plan includes acreage for a national tallgrass prairie park, a national cemetery, and a county landfill, in addition to industrial elements that could generate tax revenues and provide employment.

Representative Sangmeister introduced legislation to implement the land-use plan. With passage of the legislation (which takes into account the base closure and the evacuation of residents), local land-use interests will be addressed. This change of cleanup standards will greatly reduce the cost and time required for cleanup.

POC: Art Holz, (815) 423-2877

The DE ARNG has received the Governor's Award for Environmental Excellence, based on its ongoing environmental efforts.

Delaware Army National Guard—NGB: *Receives Governor's Award*

In November 1994 the Delaware Army National Guard (DE ARNG) received the Governor's Award for Environmental Excellence, based on its ongoing hazardous-waste reduction program, hazardous-waste minimization effort, underground-storage-tank management, and soil-bioremediation project. The bioremediation project, the largest of its kind in Delaware to date, treated about 5,700 cubic yards of soil, with cost savings estimated at $60,000. From September 1993 through December 1994, the DE ARNG reduced hazardous-waste generation by approximately 60 percent and saved about $25,000 in disposal fees. This record places the DE ARNG well ahead of the 1995 Army-wide goal of 50 percent reduction in hazardous-waste generation.

POC: 1st Lieutenant Scott Ralph, (302) 324-7008

Fort Jackson, South Carolina—TRADOC: *New Environmental Review Process*

A new, user-friendly environmental-review process helps in assessments of potential impacts on the environment.

Fort Jackson, Environmental and Natural Resources Division (ENRD), has established a new, "user friendly" environmental review process under the requirements of the National Environmental Policy Act (NEPA). This procedure is intended to be used for assessing potential impacts of proposed actions, such as new construction. Fort Jackson's environmental review process is initiated when the project proponent submits an Environmental Review Form (ERF) to the ENRD that contains information on the proposed action, including a location map. The ERF is routed to the Environmental Management Branch, where the project is reviewed for environmental permit requirements and potential impacts to Installation Restoration Program sites. The Natu-

ral Resources Branch reviews the projects for potential impacts on threatened and endangered species, archaeological sites, and wetlands. The environmental review process is initiated with the submittal of an Environmental Review Form (ERF) by the proponent to ENRD, project review by the appropriate branches, and the Memorandum of Environmental Approval.

The NEPA coordinator reviews comments from the Environmental Management Branch and Natural Resources Branch and determines if the project qualifies for a categorical exclusion or has potential impacts that warrant the preparation of an environmental assessment.

If an assessment is required, the NEPA coordinator serves as a technical advisor to the proponent during the preparation of the environmental document. Project modifications are recommended so that environmental impacts are mitigated or eliminated and so that environmental laws and regulations are complied with. If the project qualifies for a categorical exclusion, the proponent is advised of the project approval and any conditions required, such as environmental permits in a Memorandum of Environmental Approval.

POC: Nancy J.N. Ferguson, (803) 751-7333/5011

The ECO program has been very successful in increasing environment awareness and compliance at Fort Jackson, leading to a significant reduction in deficiencies during compliance inspections.

Fort Jackson, South Carolina—TRADOC: *Environmental Compliance Officers (ECO)*

Fort Jackson established a network of ECOs at all commands, directorates, staff offices, and tenant organizations to assist with environment compliance within their organizations. Each organization, down to the company level, is required by the Fort Jackson Environmental Regulation to appoint, in writing, an ECO and an alternate.

The ECO program has been very successful in increasing environmental awareness and compliance at Fort Jackson. Since the implementation of the ECO program at Fort Jackson, Environmental Management Branch personnel have documented a significant reduction in the deficiencies during compliance inspections. The ECOs have played a major part in the success of this program.

The ECO must hold the minimum rank of E-5 and must attend the installation ECO Training Course annually. The ECOs are responsible for conducting environmental training for personnel within their unit or activity.

The ECOs and personnel who work with hazardous waste are regularly trained on the proper procedures of handling, storing, and disposing of hazardous waste. This training continues to demonstrate why no major deficiencies were noted at Fort Jackson's Resources Conservation and Recovery Act inspection by the state and federal regulators. To date, approximately 800 service members, civilians, and contractors have been given hazardous-waste training.

POC: Bill Fanning, (803) 751-6851/5011

Presidio of San Francisco, California—TRADOC: *Involving the Public*

A Restoration Advisory Board is increasing public involvement in the post's transformation into a national park.

In conjunction with the closing of the Presidio of San Francisco and its transformation into a national park, the Presidio formed a Restoration Advisory Board (RAB). This body helps involve the public in the post's transformation process. Although the Presidio already had a Technical Review Committee (TRC) that included the public and members of interest groups, the RAB was formed to solicit broader community interests. RAB meetings are open to the public.

The selection panel for the Presidio's RAB received about 85 applications for membership. Representatives of the Army, of state and federal regulatory agencies, and of the National Park Service selected 10 members. RAB members also represent homeowner associations and environmental groups; others are individual citizens.

The RAB is actively involved in reviewing documents and addressing issues related to environmental restoration at the Presidio, to ensure that the installation will be suitable for reuse as a park.

A German-American coalition is helping to solve environmental problems and to sponsor environmental-awareness events.

Würzburg, Germany—USAREUR: *German-American Environmental Partnership*

The U.S. Army and its neighbors in Würzburg, Germany, have formed a German-American Environmental Coalition jointly to solve environmental problems. In addition to working on local issues, the group has adopted the mission of sponsoring an annual German-American Earth Day, which brings hundreds of German and American school children together for a joint environmental-awareness event.

POC: Lieutenant Colonel Leonard Hassell, 011-49-6221-57-7328, DSN 370-7328

Appendix A: Installations with Good News by MACOM

Army Materiel Command (AMC)

Army Aviation Troop Command, St. Louis, Missouri

Army Acquisition Support Office, Virginia

Army Research Laboratory, Watertown, Massachusetts

Army Ammunitions and Chemical Command, Rock Island, Illinois

Army Research Laboratory, Adelphi, Maryland

Fort Wingate Depot, Gallup, New Mexico

Joliet Army Ammunition Plant, Wilmington, Illinois

Lake City Army Ammunition Plant, Independence , Missouri

Pine Bluff Arsenal, Pine Bluff, Arkansas

Radford Army Ammunition Plant, Radford, Virginia

Riverbank Army Ammunition Plant, Riverbank, California

Sierra Army Depot, Herlong, California

Tank Automotive and Ammunition Command, Warren, Michigan

Tobyhanna Army Depot, Tobyhanna, Pennsylvania

Twin Cities Army Ammunition Plant, Brighton, Minnesota

Umatilla Depot Activity, Hermiston, Oregon

Army Reserve Command

416th Engineer Command, Washington, D.C.

Forces Command (FORSCOM)

Fort Carson, Colorado

Fort Hood, Texas

Fort Irwin, California

Fort Lewis, Washington
Fort McPherson, Georgia
Fort Polk, Louisiana
Fort Riley, Kansas
Fort Sam Houston, Texas

Military District of Washington, D.C. (MDW)

Fort Belvoir, Virginia

National Guard Bureau (NGB)

Delaware National Guard
Iowa National Guard
Missouri National Guard
Nevada National Guard
North Dakota National Guard
Texas National Guard
Utah National Guard

U.S. Army Pacific (USARPAC)

17th Area Support Group, Honshu, Japan
Aliamanu Military Reservation, Hawaii
Fort Shafter, Hawaii
Makua Military Reservation, Hawaii
Schofield Barracks, Hawaii

Training and Doctrine Command (TRADOC)

Fort Benning, Georgia
Fort Gordon, Georgia
Fort Jackson, South Carolina

Fort Leonard Wood, Missouri
Fort Monroe, Virginia
Fort Ord, California
Fort Sill, Oklahoma
Presidio of Monterey, California
Presidio of San Francisco, California

U.S. Army Europe (USAEUR)

100th Area Support Group
Hanau, Germany
Vilseck, Germany
Würzburg, Germany

Appendix B: Installations with Good News by State and Overseas Country

Arkansas

Pine Bluff Arsenal, Pine Bluff, Arkansas

California

Fort Irwin, California

Fort Ord, California

Presidio of Monterey, California

Presidio of San Francisco, California

Riverbank Army Ammunition Plant, Riverbank, California

Sierra Army Depot, Herlong, California

Colorado

Fort Carson, Colorado

Delaware

Delaware National Guard

District of Columbia

416th Engineer Command, Washington, D.C.

Georgia

Fort Gordon, Georgia

Fort Benning, Georgia

Fort McPherson, Georgia

Hawaii

Aliamanu Military Reservation, Hawaii

Fort Shafter, Hawaii

Makua Military Reservation, Hawaii

Schofield Barracks, Hawaii

Illinois

Joliet Army Ammunition Plant, Wilmington, Illinois

U.S. Army Ammunitions and Chemical Command, Rock Island, Illinois

Maryland

Army Environmental Center, Aberdeen, Maryland

Army Research Laboratory , Adelphi, Maryland

New Mexico

Fort Wingate Depot, Gallup, New Mexico

Massachusetts

Army Research Laboratory, Watertown, Massachusetts

Michigan

Tank Automotive and Ammunition Command, Warren, Michigan

Minnesota

Twin Cities Army Ammunition Plant, Brighton, Minnesota

Missouri

Fort Leonard Wood, Missouri

Lake City Army Ammunition Plant, Independence, Missouri

Missouri National Guard

U.S. Army Aviation Troop Command, St. Louis, Missouri

New Mexico

Fort Wingate Depot, Gallup, New Mexico

Oklahoma

Fort Sill, Oklahoma

Oregon

Umatilla Depot Activity, Hermiston, Oregon

Pennsylvania

Tobyhanna Army Depot, Tobyhanna, Pennsylvania

South Carolina

Fort Jackson, South Carolina

Texas

Fort Hood, Texas

Fort Sam Houston, Texas

Texas National Guard

Virginia

Army Acquisition Support Office, Virginia

Fort Belvoir, Virginia

Fort Monroe, Virginia

Radford Army Ammunition Plant , Radford, Virginia

Washington

Fort Lewis, Washington

Overseas

Japan

17th Area Support Group, Honshu, Japan

Germany

100th Area Support Group

Hanau, Germany

Vilseck, Germany

Würzburg, Germany

Appendix C: Good News Submission and Comment Form

Army Environmental Policy Institute will update environmental successes and produce a new volume of *U.S. Army Environmental Management Good News Stories* annually. In order to accomplish this, AEPI needs new information from the field. AEPI requests that commands, units, and individuals, send Good News information to:

Environmental Good News Stories
Army Environmental Policy Institute
430 10th Street, Suite S-206
Atlanta, Georgia 30318-5768

AEPI also requests that readers submit comments on the content and value of this publicaton. AEPI is particularly interested in ways that these good news items have prompted new actions or programs.

Comments _____

_____

_____

_____

_____

_____

_____

_____

_____

Your Name _____

Phone (commercial w/area code) _____

Organization _____

Glossary of Acronyms

AAP	Acelerated Action Plan
AAPPSO	Army Acquisition Pollution Prevention Support Office
AEO	Army Environmental Center
AG&FC	Arkansas Game and Fish Commission
ALC	Adelphi Laboratory Center
AMC	Army Material Command
AMCCOM	Armament, Munitions and Chemical Command
BIO-T	Cleaning Solvent
BPFTF	Blossom Point Field Test Facility
BRAC	Base Realignment and Closure
CEIHOT	Center for Environmental Initiative and Hands On Training
CONUS	Continental United States
CW5	Chief Warrant Officer 5
CY	Calendar Year
DECAM	Directorate of Environmental Compliance and Management
DENR	Directorate of Environmental & Natural Resources
DNR	Department of Natural Resources
DOD	Department of Defense
DPW	Directorate of Public Works
E-5	Enlisted 5
ECO	Environmental Compliance Officer
EMC–C	Equipment Maintenance Center–CONUS
ENRMD	Environment & Natural Resources Management Division
ENV	Environmental Division

EPA	Environmental Protection Agency
FORSCOM	Forces Command
FY	Fiscal Year
HW	Hazardous Waste
KDWP	Kansas Department of Wildlife and Parks
LCAAP	Lake City Army Ammunition Plant
LTC	Lieutenant Colonel
MDW	Military District of Washington
MN DNR	Minnesota Department of Natural Resources
ND ARNG	North Dakota Army National Guard
OEW	Ordnance and Explosive Waste
PBA	Pine Bluff Arsenal
PD-680	Cleaning Solvent
PMP	Predator Management Program
POC	Point of Contact
POL	Petroleum, Oil, and Lubricants
POM	Presidio of Monterey
RAAP	Radford Army Ammunition Plant
RAB	Restoration Advisory Board
RI/FS	Remedial Investigations and Feasibility
ROD	Record of Decision
SCAPS	Site Characterization and Analysis Penetrometer System
SCS	Soil Conservation Service
TC	Training Circular
TCAAP	Twin Cities Army Ammunition Plant
TCE	Trichloroethylene
TCO	Target Community Outreach

TRADOC	Training and Doctrine Command
TRC	Technical Review Committee
TVT 5-56	Training Video Tape
U of M	University of Minnesota
USFWS	U.S. Fish and Wildlife Service
UST	Underground Storage Tank
WRF	Woodbridge Research Facility

Installation Index

Printed on recycled paper.